

ABSTRACT OF THE DISCLOSURE

In order to overcome problems when using an adaptive filter for cancellation of
5 common-mode noise in digital subscriber loops, caused by a portion of the differential
signal being converted to common mode, which degrades the performance of the filter,
a noise cancellation technique is proposed which compensates for this cross-coupled
signal energy. In particular, a digital noise detector is used to detect one or more noisy
frequency bands of the common mode signal and pass only the digitized common mode
10 signal in those detected frequency bands through the adaptive filter to produce a digital
common mode noise estimate signal. A control unit adjusts coefficients of the adaptive
filter to reduce correlation between the differential signal and common mode signal. It
is also proposed to compensate for the effects of stray capacitive coupling across the
usual hybrid device by including an equivalent capacitive component in a common mode
15 noise estimation circuit.